

08 / 931 125

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,832,291 B2
DATED : December 14, 2004
INVENTOR(S) : Hae-Seung Lee

Page 1 of 6

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Replace the current title page with the attached title page

Drawings,

Replace Figures 1, 2, 3 and 5 with the attached drawings

Signed and Sealed this

First Day of March, 2005

A handwritten signature in black ink, reading "Jon W. Dudas". The signature is stylized, with a large, looped initial "J" and a distinct "D" at the end.

JON W. DUDAS
Director of the United States Patent and Trademark Office

(12) **United States Patent**
Lee

(10) **Patent No.:** US 6,832,291 B2
(45) **Date of Patent:** Dec. 14, 2004

(54) **MEMORY SYSTEM FOR IMPROVING DATA INPUT/OUTPUT PERFORMANCE AND METHOD OF CACHING DATA RECOVERY INFORMATION**

(75) **Inventor:** Hae-Seung Lee, Ahnyang (KR)

(73) **Assignee:** Samsung Electronics Co., Ltd., Suwon (KR)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 222 days.

(21) **Appl. No.:** 08/931,125

(22) **Filed:** Sep. 16, 1997

(65) **Prior Publication Data**

US 2002/0007438 A1 Jan. 17, 2002

(30) **Foreign Application Priority Data**

Sep. 16, 1996 (KR) 96-40202

(51) **Int. Cl.⁷** G06F 12/16; G06F 12/08

(52) **U.S. Cl.** 711/114; 711/113; 714/6

(58) **Field of Search** 711/112, 113, 711/114; 714/6, 7, 8

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,257,367 A	10/1993	Goodlander et al.	707/204
5,341,381 A	8/1994	Fuller	371/10.1
5,367,669 A	11/1994	Holland et al.	395/575
5,418,921 A	5/1995	Cortney et al.	711/114
5,455,934 A	10/1995	Holland et al.	711/4
5,463,765 A	10/1995	Kakuta et al.	714/6
5,485,598 A	1/1996	Kashima et al.	714/6

5,522,032 A	5/1996	Franszsek et al.	714/6
5,530,948 A	6/1996	Islam	714/6
5,572,660 A	* 11/1996	Jones	714/6
5,579,474 A	11/1996	Kakuta et al.	714/6
5,583,876 A	* 12/1996	Kakuta	711/114
5,636,359 A	6/1997	Beardsley et al.	711/122
5,640,506 A	6/1997	Duffy	714/6
5,734,814 A	* 3/1998	Corbin et al.	714/6
5,737,741 A	* 4/1998	Hildach et al.	711/114
5,809,206 A	* 9/1998	Seki	386/125
5,835,940 A	* 11/1998	Yorimitsu et al.	711/112

FOREIGN PATENT DOCUMENTS

JP	7-210334	7/1995
JP	7-200190	8/1995

* cited by examiner

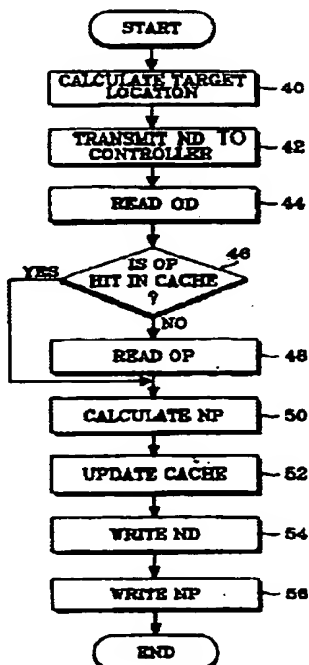
Primary Examiner—Gary Portka

(74) *Attorney, Agent, or Firm*—Robert E. Bushnell, Esq.

(57) **ABSTRACT**

A redundant array of inexpensive disks (RAID) system includes a plurality of defect-adaptive memory devices for sequentially storing information needed for data recovery in a predetermined region of a recording medium in the form of block, and storing data in a region other than the predetermined region. A plurality of caches are connected to the adaptive memory devices to store information blocks needed for data recovery, the information blocks being read from a predetermined memory device. A controller is connected to each adaptive memory device and cache to control the writing and reading of data and information needed for data recovery in each memory device, calculate information needed for recovery of data read from each memory device, and store the information needed for recovery of data calculated in a predetermined cache.

9 Claims, 5 Drawing Sheets



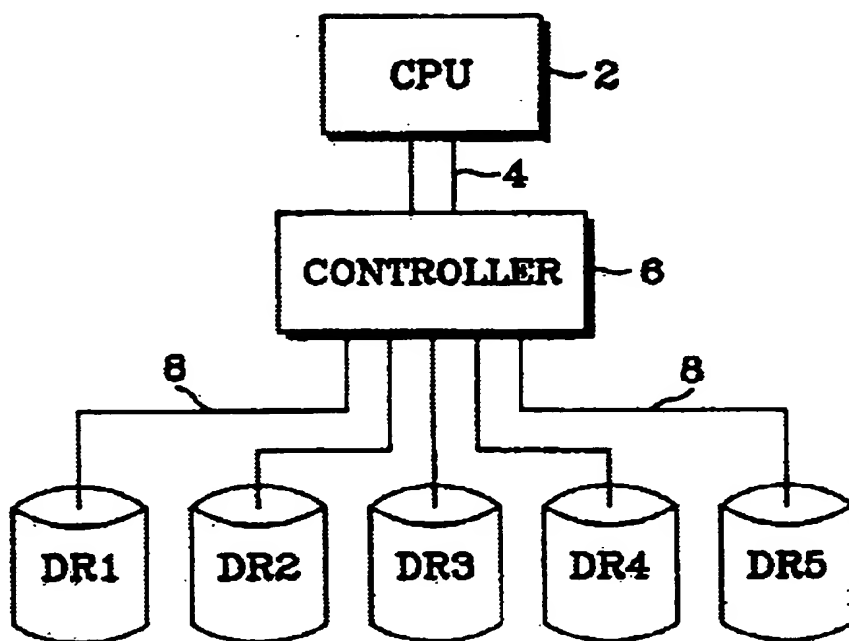
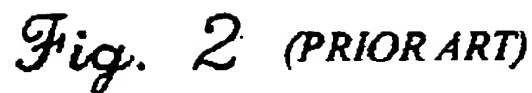


Fig. 1 (PRIOR ART)



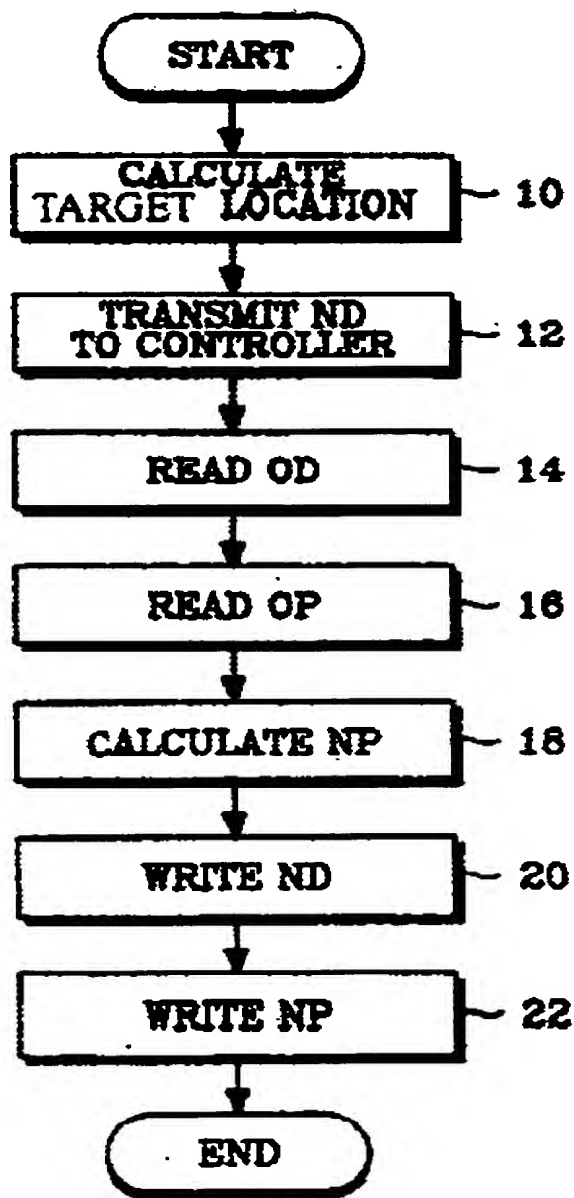


Fig. 3 (PRIOR ART)

U.S. Patent

Dec. 14, 2004

Sheet 5 of 5

6,832,291 B2

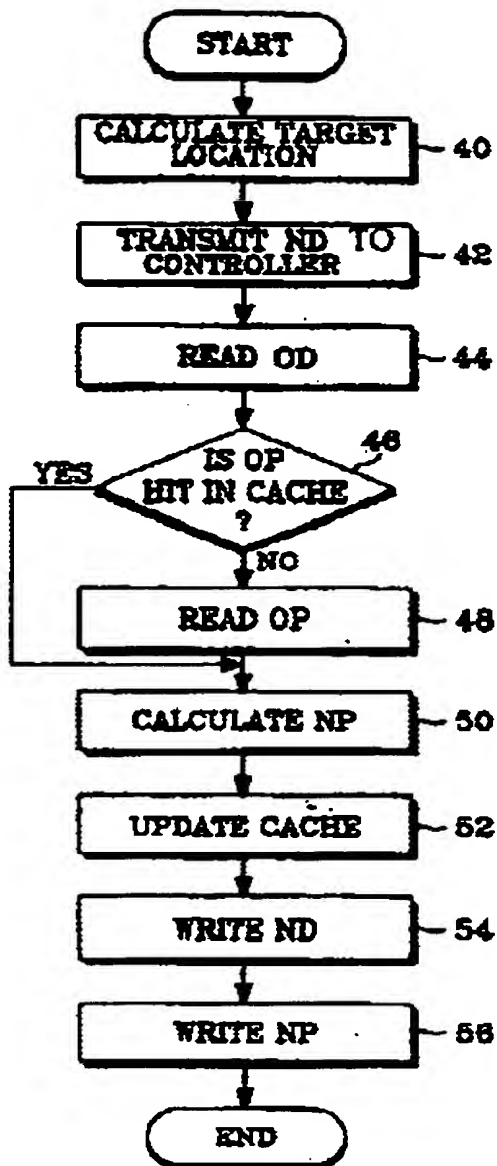


Fig. 5